

A New Species of *Cuthona* from the Gulf of California

by

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Abstract. A new species, *Cuthona longi* Behrens, from the Gulf of California is described. This description represents the first occurrence of the genus *Cuthona* in the Gulf of California.

THE SYSTEMATIC status of *Catriona* Winckworth, 1941, *Cuthona* Alder & Hancock, 1855, and *Trinchesia* Ihering, 1879, has changed several times. The most recent revisions maintain *Cuthona* as a valid genus (GOSLINER & GRIF-FITHS, 1981) and recommend Tergipedidae Thiele, 1931, as the appropriate family designation (BROWN, 1980). BEHRENS (1984) reports 14 species of tergipedid nudibranchs for the northeastern Pacific, 12 of which are assigned to *Cuthona*. Collections made at Isla Raza, Baja California by Mr. Jeff Hamann included numerous specimens of a heretofore undescribed tergipedid nudibranch. To date there have been no cuthonid species reported from the Gulf of California, although at least two distinct species are known (J. R. Lance and T. M. Gosliner, personal communications; present study).

TERGIPEDIDAE Thiele, 1931

Cuthona Alder & Hancock, 1855

Cuthona longi Behrens, spec. nov.

(Figures 1 to 6)

Materials examined: (1) Holotype: one specimen approximately 10 mm long (preserved), collected in 3.1 m of water at Isla Raza, Baja California, Mexico (28°48'N, 113°0'W) in July 1982 by Jeff Hamann. This specimen is deposited in the collection of the California Academy of Sciences, Department of Invertebrate Zoology and Geology (CAS), CASIZ 053592.

(2) Paratypes: one specimen, 9 mm long (preserved), collected concurrently with the holotype is also deposited in the CAS collection, CASIZ 053593.

(3) One specimen, 10 mm long (preserved) collected concurrently with the holotype is deposited in the type collection of Los Angeles County Museum (LACM), Type Series No. 2085. Color transparencies of living *Cuthona longi* are on file at CAS and LACM.

Other material examined: (1) Six specimens, Isla Raza, Baja California; leg. D. W. Behrens, July 1982.

Description: Living animals measured up to 34 mm long. The body is typically aeolidiform, tapering posteriorly (Figures 1, 6). The foot is narrow, linear, tapering to a point posteriorly. The tail is short. The foot corners are rounded; only slightly laterally produced. The cephalic tentacles are cylindrical, tapering to a blunt tip and about ½ the length of the rhinophores. The rhinophores are closely set, long, smooth, and tapering to a rounded tip. The cerata are cylindrical, linear with a conical tip, and attain a maximum length equal to about ⅔ the length of the rhinophores (Figure 1). They are arranged in thirteen transverse rows dorsolaterally on the dorsum. The first row is situated immediately lateral to the rhinophores. The ceratal half formula from a series of large specimens is I 3-6, II 4-7, III 4-7, IV 5-8, V 6-7 (prepericardial); VI 5-6, VII 4-6, VIII 4-5, IX 4-5, X 3-4, XI 3, XII 2, XIII 1-2 (postpericardial). The ceratal arrangement is shown in Figure 2. The anal pore is anterior to the medial ceras of the sixth ceratal (first postpericardial) group and to the right of the pericardial elevation (Figure 2). The renal pore is just medial to the anal pore. The genital orifice lies below and between the first and second ceratal groups on the right side of the body (Figure 2).

The ground color of the body is pale yellow. Irregular patches of white and pale yellow pigment occur dorso-medially on the notum, head, and on the anterior surfaces of the rhinophores and cephalic tentacles. A pale blue rhomboidal patch occurs on the head, between the eyes and just posterior to the rhinophores. A smaller triangular patch of pale blue occurs anterior to and between the rhinophores. A few pale blue specks occur scattered over the notum. The distal ⅓ of the rhinophores is encrusted with white pigmentation. The coloration of the cerata is complex (Figure 1b). The tip of each ceras is white, fol-

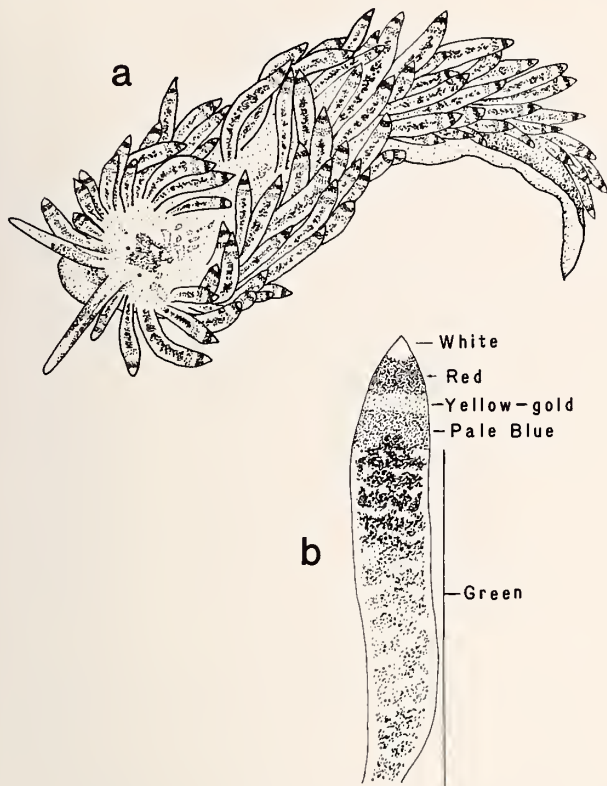


Figure 1

a. Dorsal view of *Cuthona longi* spec. nov., 10 mm in length. Isla Raza, Baja California. Drawn from color transparency. b. Ceras of *Cuthona longi* spec. nov. (Surface specks not shown.)

lowed by a subapical band of red. Below the red band is a thinner opaque yellow-gold band, followed by a slightly wider band of pale blue. Below this series of bands, the liver diverticulum appears granular in nature, fading in color from dark to light kelly green at the insertion. The entire surface of each ceras is speckled with opaque white specks.

The radular formula is 60-89 × 0.1.0. There are no preradular teeth. Each rachidian tooth is a low horseshoe-shaped arch, with a deep articulatory socket on the anterior surface on either side (Figure 3). The ceratal cusp forms a low ridge. There are 5 or 6 strong denticles to each side of the cusp, the largest being adjacent to the cusp and the others becoming smaller as they approach the side of the tooth. The jaws are lightly tinted gold and broadly oval (Figure 4a). The masticatory border is short with 30-45 irregular nodulous denticles (Figure 4b). In one of four specimens examined, a series of 3 or 4 hooks occurs below the non-hinged margin (Figure 4c). This feature, although probably an artifact, is mentioned because of its seemingly intentional presence on each plate of the jaw.

The reproductive system is typically cuthonid. The penial papilla is conical (Figure 5a). After dissection and

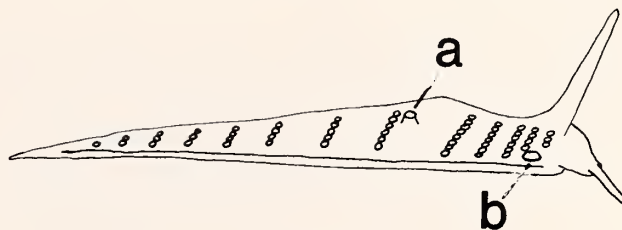


Figure 2

Diagrammatic right lateral view of the body of *Cuthona longi* spec. nov. a, anus; b, genital aperture.

clearing with 0.5 N quaternary ammonium hydroxide it was found to be unarmed. The ovotestis is massive containing large male acini with numerous smaller, peripheral female acini. The ampulla is convoluted. The vas deferens is short. The egg mass is a white semicircular coil attached to the substrate at the center of the whorl (Figure 5b). Its morphology does not fit HURST's (1967) classification. It is a combination of her Type A and Type D egg masses. The egg capsules are arranged within the ribbon in neat repetitive rows, radiating from the center of the crescent-shaped whorl. The region of attachment is thin and capsule-free. There were approximately 18-20 egg capsules per row and 50 rows per coil. The egg masses collected in July 1982 measured about 2.5 mm in diameter and were found on a leafy encrusting bryozoan growing at the base of a branched plumularid hydroid.

Discussion: Placement of *Cuthona longi* is based upon the presence of a non-tapering radula and the absence of a preradular tooth and penial stylet (GOSLINER & GRIF-

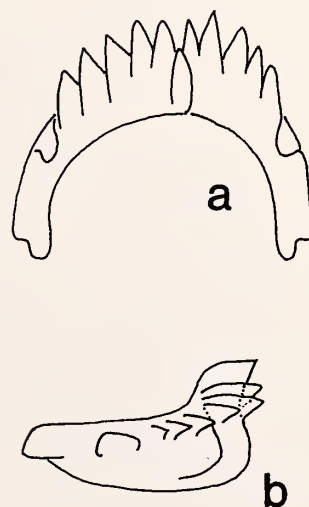


Figure 3

Radular teeth of *Cuthona longi* spec. nov. a, plain view; b, lateral view.

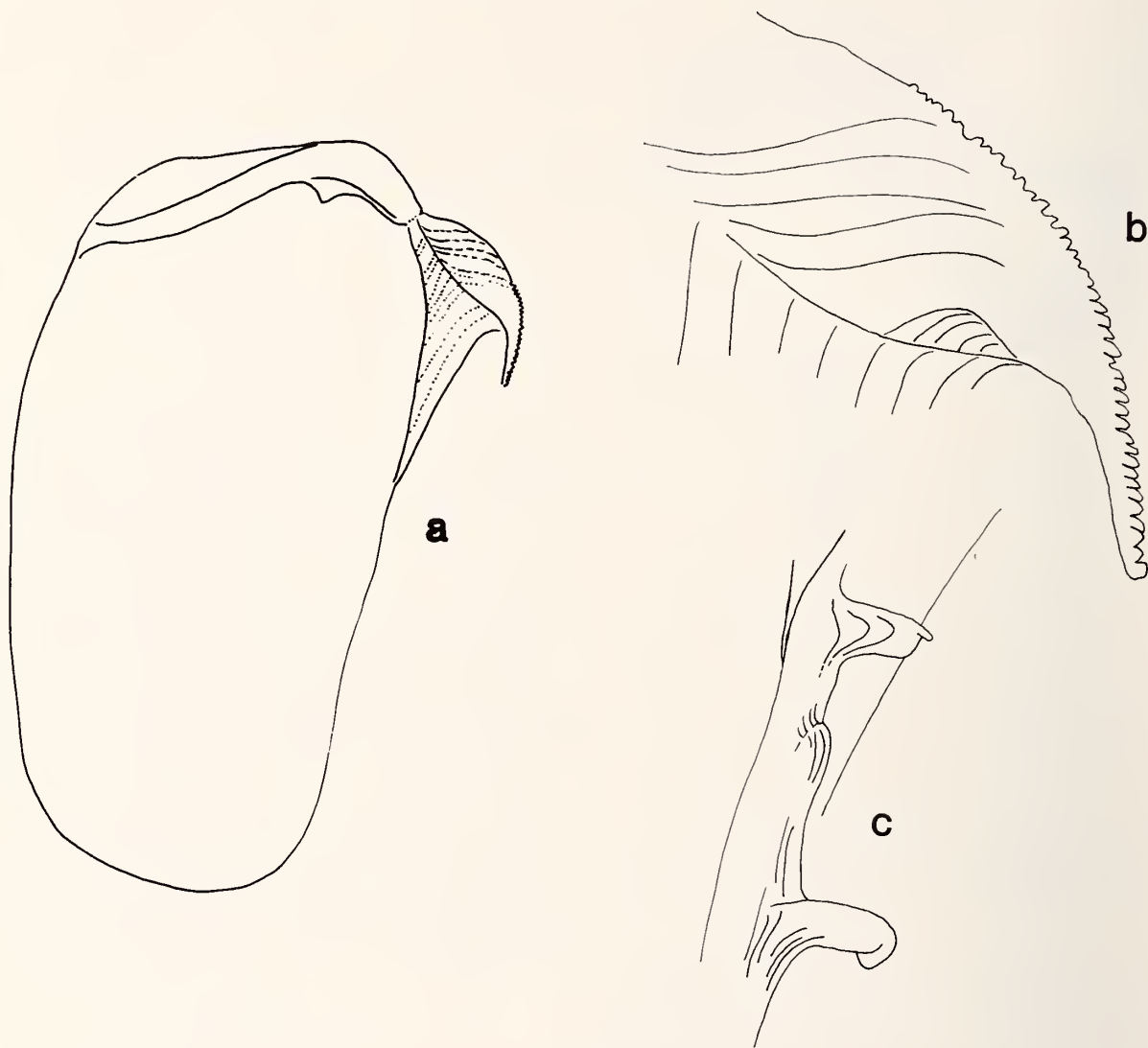


Figure 4

Jaw plate of *Cuthona longi* spec. nov. a, plain view; b, masticatory edge; c, hooks on margin of jaw.

FITHS, 1981). The species shares characteristics, however, with members of the genus *Catriona*, including a radula with greater than 50 teeth and the presence of bristles on the masticatory border of the jaw (GOSLINER & GRIFFITHS, 1981).

Cuthona longi is the first member of this genus to be described from the Gulf of California. Very few species assigned to this genus anywhere in the world exhibit blue pigmentation. *Cuthona caerulea* (Montagu, 1804) from the British Isles bears a brilliant blue ring medially on the cerata (THOMPSON & BROWN, 1976; BROWN & PICTON, 1979). In *C. speciosa* (Macnae, 1954) from South Africa the ceratal epithelium may be bright pale, luminescent blue (GOSLINER & GRIFFITHS, 1981). In *C. ornata* Baba, 1937, from Japan the ceratal core is cobalt blue (BABA,

1937). Only *C. genovae* (O'Donoghue, 1929) from the Mediterranean bears blue pigmentation on the body surface. In this species the head and prepericardial region is light blue with a medial white stripe (BOUCHET, 1976). The cerata also bear blue coloration.

Cuthona longi can be separated from northeastern Pacific species by its distinctive body and ceratal coloration and by its radula and jaw morphology. Pigmentation on the head region is not uncommon in *Cuthona*, as noted for *C. genovae* above; however, in the northeastern Pacific no species bears any pigmentation vaguely resembling that found on *C. longi*—a pale blue rhomboid patch on the head between the eyes and posterior to the rhinophores. In several species, *C. lagunae* (O'Donoghue, 1926), *C. perca* (Marcus, 1968), *C. abronia* (MacFarland, 1966), *C.*

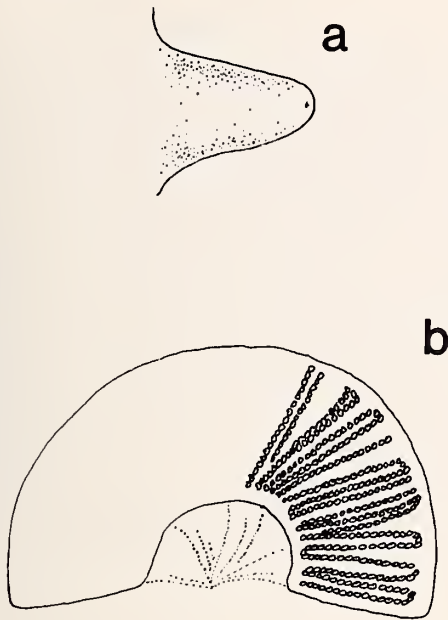


Figure 5

a. Penis of *Cuthona longi* spec. nov. b. Egg mass of *Cuthona longi* spec. nov. (Not all eggs shown.)

albocrusta (MacFarland, 1966), *C. flavovulta* (MacFarland, 1966), and *C. virens* (MacFarland, 1966) ceratal core coloration may be green (BEHRENS, 1980, 1984; McDONALD, 1983); however, *C. longi* differs strikingly from all the above in the complex surface pigmentation of three distinct bands of color below a white apical tip, the opaque gold band being unique to the genus.

The length of the radula is similar to *Cuthona albocrusta*, *C. flavovulta*, and *C. lagunae*, having 60–89 teeth, all other species having shorter radulae (MCDONALD, 1983). The masticatory border of the jaw has a much greater number of denticles (30–45) than other north-eastern Pacific species; however, the shape of the denticles is somewhat similar to those of *C. flavovulta*, *C. fulgens*, and *C. lagunae* (ROLLER, 1969; McDONALD, 1983).

The specific name *longi* is chosen to acknowledge the tireless efforts and scientific contributions of Mr. Steven J. Long, editor and publisher of *Shells and Sea Life*, previously the *Opisthobranch Newsletter*.

ACKNOWLEDGMENTS

I am grateful to Jeff Hamann for providing me with specimens and distributional data on this species, to Terry Gosliner for his assistance in differentiating this species



Figure 6

Cuthona longi spec. nov., 10 mm in length. Isla Raza, Baja California, Mexico. Photograph by Jeff Hamann.

from the dozens of cuthonid species worldwide, and to the referees for their careful review of the manuscript and constructive comments.

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